

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends upon the absorption by the atmosphere, and varies largely with the distribution of cloudiness. The sunshine is now recorded automatically at 21 regular stations of the Weather Bureau by its photographic, and at 47 by its thermal effects. The photographic record sheets show the apparent solar time, but the thermometric records show seventy-fifth meridian time; for convenience the results are all given in Table IX for each hour of local mean time. In order to complete the record of the duration of cloudiness these registers are supplemented by special personal observations of the state of the sky near the sun for an hour after sunrise and before sunset, and the cloudiness for these hours has been added as a correction to the instrumental records, whence there results a complete record of the duration of sunshine from sunrise to sunset.

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table IX for the stations at which instrumental self-registers are maintained.

The percentage of clear sky (sunshine) for all of the stations included in Table I, obtained as described in the preceding paragraph, is graphically shown on Chart VII. The regions of cloudy and overcast skies are shown by heavy shading; an absence of shading indicates, of course, the prevalence of clear, sunshiny weather.

The formation of fog and cloud is primarily due to differences of temperature in a relatively thin layer of air next to the earth's surface. The relative position of land and water surfaces often greatly increases the tendency to form areas of cloud and fog. This principle is perhaps better exemplified in the Lake Region than elsewhere, although it is of quite general application. The percentage of sunshine on the lee shores of the Lakes is always much less than on the windward shores. Next to the permanent influences that tend to form fog and cloud may be classed the frequency of the passage of cyclonic areas.

The current month.—The month was generally one of diminished cloudiness and consequently of increased sunshine, particularly in North Dakota, western Montana, Idaho, Min-

nesota, and the Pacific Coast. Sunshine was below normal in New England and the Middle Atlantic States.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	6.4	+1.1	Missouri Valley	5.0	-0.4
Middle Atlantic	6.0	+0.8	Northern Slope	5.1	-0.3
South Atlantic	4.2	-0.2	Middle Slope	4.7	+0.3
Florida Peninsula	3.0	-0.9	Southern Slope	4.2	0.0
East Gulf	3.9	-0.6	Southern Plateau	2.5	+0.2
West Gulf	4.6	-0.6	Middle Plateau	3.6	-0.9
Ohio Valley and Tennessee	5.3	0.0	Northern Plateau	4.9	-1.4
Lower Lake	5.7	+0.2	North Pacific Coast	5.8	-0.7
Upper Lake	5.1	-0.6	Middle Pacific Coast	4.1	-0.5
North Dakota	4.3	-1.2	South Pacific Coast	3.1	-0.8
Upper Mississippi Valley	5.1	-0.4			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table IX, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 17th, 149; 10th, 141; 24th, 131; 30th, 129.

Reports were most numerous from Missouri, 118; Kansas, 99; Arkansas, 91; Illinois, 81.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 2d to the 10th, inclusive.

The greatest number of reports were received for the following dates: 12th, 32; 13th, 13; 14th, 23.

Reports were most numerous from North Dakota, 22; Minnesota, 14; New York, 9; Wisconsin, 8.

In Canada.—Auroras were reported as follows: Charlottetown, 13; Father Point, 6, 9, 10, 12, 14, 17, 22, 28; Quebec, 10, 12, 13, 14, 27; Montreal, 12, 13; White River, 15, 18; Minnedosa, 12, 15, 19, 23; Qu'Appelle, 12, 13; Banff, 11, 12, 18; Prince Albert, 14, 16, 19; Battleford, 1, 12, 14, 20, 23.

Thunderstorms were reported as follows: Toronto, 17; Swift Current, 23.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches.

Alabama.—The mean temperature was 58.3°, or 6.4° below normal; the highest was 88°, at Ashville, Tuscaloosa, and Union Springs on the 30th, and the lowest, 25°, at Madison on the 6th and at Jasper on the 7th. The average precipitation was 4.44, or 0.64 above normal; the greatest monthly amount, 8.57, occurred at Warrior, and the least, 1.60, at Newton.—*F. P. Chaffee.*

Arizona.—The mean temperature was 62.4°; the highest was 113°, at Parker on the 25th, and the lowest, 19°, at Snowflake on the 1st. The average precipitation was 0.53; the greatest monthly amount, 2.50, occurred at Flagstaff, while none fell at several stations.—*W. T. Blythe.*

Arkansas.—The mean temperature was 59.2°, or 4.4° below normal; the highest was 93°, at Lutherville on the 30th, and the lowest, 19°, at Pond on the 6th. The average precipitation was 3.08, or 1.70 below normal; the greatest monthly amount, 7.85, occurred at Moore, and the least, 1.10, at Fulton.—*E. B. Richards.*

California.—The mean temperature was 60.9°, or 2.1° above normal; the highest was 118°, at Volcano Springs on the 25th, and the lowest 9°, at Bodie on the 4th. The average precipitation was 0.41, or 1.62 below normal; the greatest monthly amount, 4.40, occurred at Cape Mendocino, while none fell at many stations.—*W. H. Hammon.*

Colorado.—The mean temperature was 45.7°, or 1.3° above normal; the highest was 90°, at Delta on the 26th, and the lowest, 5° below zero, at Breckenridge on the 4th. The average precipitation was 1.43, or about normal; the greatest monthly amount, 3.99, occurred at Stamford, and the least, 0.02, at Rangely.—*F. H. Brandenburg.*

Florida.—The mean temperature was 67.0°, or about 3.0° below normal; the highest was 95°, at Minneola Park on the 23d, 24th, and 25th, and the lowest, 34°, at Jasper, De Funiak Springs, and Wausau on the 8th. The average precipitation was 1.50, or considerably below normal; the greatest monthly amount, 7.45, occurred at De Funiak Springs, and the least, 0.12, at Kissimmee.—*A. J. Mitchell.*

Georgia.—The mean temperature was 59.4°, or 5.0° below normal; the highest was 89°, at Bainbridge on the 20th, at Macon on the 17th and at Piscola and Poulton on the 30th; the lowest was 25°, at Diamond on the 6th. The average precipitation was 4.49, or 1.16 above normal; the greatest monthly amount, 9.12, occurred at Marshallville, and the least, 2.17, at Waycross.—*J. B. Marbury.*

Idaho.—The mean temperature was 47.8°; the highest was 94°, at

Payette on the 24th, and the lowest, 4°, at Paris on the 1st. The average precipitation was 0.68; the greatest monthly amount, 2.13, occurred at Murray, and the least, 0.01, at Blackfoot.—*D. P. McCallum.*

Illinois.—The mean temperature was 49.6°, or about 3.0° below normal; the highest was 86°, at Golconda on the 30th, and the lowest, 15°, at Scales Mound on the 5th. The average precipitation was 3.26, or nearly normal; the greatest monthly amount, 5.70, occurred at Grayville, and the least, 0.76, at Chicago.—*C. E. Linney.*

Indiana.—The mean temperature was 49.5°, or 3.0° below normal; the highest was 85°, at Vevay on the 17th, and the lowest, 11°, at Winamac on the 5th. The average precipitation was 2.06, or 1.40 below normal; the greatest monthly amount, 4.16, occurred at Mount Vernon, and the least, 0.35, at Hammond.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 48.1°, or about normal; the highest was 91°, at Carroll, Glenwood, Logan, Portsmouth, and Ogden on the 16th, and the lowest, 14°, at Rock Rapids on the 5th. The average precipitation was 2.56, or nearly normal; the greatest monthly amount, 4.82, occurred at Moear, and the least, 0.27, at Larchwood.—*G. M. Chappel.*

Kansas.—The mean temperature was 53.7°, or 2.2° below normal; the highest was 93°, at Achilles on the 15th and at Dresden on the 16th, and the lowest, 10°, at Eureka and Hoxie on the 2d. The average precipitation was 3.10, or 0.45 above normal; the greatest monthly amount, 8.11, occurred at Campbell, and the least, 0.25, at Ulysses.—*T. B. Jennings.*

Kentucky.—The mean temperature was 52.4°, or 5.0° below normal; the highest was 86°, at Paducah on the 30th, and the lowest, 19°, at Ashland on the 6th. The average precipitation was 3.38, or 0.80 below normal; the greatest monthly amount, 5.55, occurred at Henderson, and the least, 1.08, at Carrollton.—*G. E. Hunt.*

Louisiana.—The mean temperature was 62.9°, or about 5.0° below normal; it was the coolest April on record; the highest was 89°, at Como on the 17th, at Liberty on the 18th, at Jeanerette on the 19th, and at White Sulphur Springs on the 22d; the lowest was 28°, at Robeline on the 7th. The average precipitation was 3.04, or about 1.00 below normal; the greatest monthly amount, 5.67, occurred at Bastrop, and the least, 0.80, at Venice.—*R. E. Kerkam.*

Maryland and Delaware.—The mean temperature was 49.4°, or 3.4° below normal; the highest was 88°, at Ocean City, Md., on the 18th, and the lowest, 6°, at Deerpark, Md., on the 6th. The average precipitation was 2.91, or 0.43 below normal; the greatest monthly amount, 5.65, occurred at Sunnyside, Md., and the least, 0.57, at Hagerstown, Md.—*F. J. Walz.*

Michigan.—The mean temperature was 42.3°, or 1.5° below normal; the highest was 79°, at Mottville on the 17th, and the lowest, 3° below zero, at Sidnaw on the 5th. The average precipitation was 1.66, or 0.71 below normal; the greatest monthly amount, 3.58, occurred at Northport, and the least, 0.19, at Rockland.—*C. F. Schneider.*

Minnesota.—The mean temperature was 43.5°, or about 1.0° below normal; the highest was 87°, at Montevideo on the 15th, and the lowest, zero, at Koochiching on the 3d. The average precipitation was 1.64, or about 1.00 below normal; the greatest monthly amount, 6.29, occurred at Bingham Lake, and the least, 0.32, at St. Cloud.—*T. S. Outram.*

Mississippi.—The mean temperature was 60.0°, or 4.7° below normal; the highest was 96°, at Burke on the 24th, and the lowest, 25°, at French Camp on the 7th. The average precipitation was 3.32, or 3.11 below normal; the greatest monthly amount, 5.22, occurred at Water Valley, and the least, 1.35, at Mossport.—*R. J. Hyatt.*

Missouri.—The mean temperature was 52.5°, or 3.8° below normal; the highest was 90°, at Malden on the 30th, and the lowest, 14°, at Potosi on the 7th. The average precipitation was 3.63, or 0.30 below normal; the greatest monthly amount, 6.65, occurred at Sublett, and the least, 0.87, at Zeitonia.—*A. E. Hackett.*

Montana.—The mean temperature was 44.0°, or slightly above normal; the highest was 89°, at Augusta on the 25th, and the lowest, 13° below zero, at Kipp on the 1st. The average precipitation was 1.04, or 0.03 above normal; the greatest monthly amount, 3.10, occurred at Dearborn Canyon, and the least, 0.10, at Radersburg.—*J. Warren Smith.*

Nebraska.—The mean temperature was 48.0°, or about 2.0° below normal; the highest was 98°, at Benkelman on the 15th, and the lowest, 5°, at Callaway on the 6th. The average precipitation was 2.14, or 0.71 below normal; the greatest monthly amount, 5.80, occurred at Wilber, and the least, 0.10, at Lodgepole.—*G. A. Loveland.*

Nevada.—The mean temperature was 51.1°, or about 3.0° above normal; the highest was 103°, at St. Thomas on the 26th, and the lowest, 12°, at Elko on the 1st and at Tuscarora on the 2d. The average precipitation was 0.71, or 0.28 above normal; the greatest monthly amount, 2.50, occurred at Tecoma, while none fell at several stations.—*R. F. Young.*

New England.—The mean temperature was 42.0°, or 1.8° below normal; the highest was 78°, at North Grosvenor Dale, Conn., on the 18th, and the lowest, 5°, at Mayfield, Me., and Berlin Mills, N. H., on the 4th. The average precipitation was 4.17, or 1.39 above normal; the greatest monthly amount, 8.47, occurred at Cohasset, Mass., and the least, 1.89, at Cornwall, Vt.—*J. W. Smith.*

New Jersey.—The mean temperature was 45.8°, or 1.8° below normal; the highest was 81°, at Vineland on the 23d, and the lowest, 13°, at Franklin Furnace on the 13th, and at Charlotteburg on the 14th. The average precipitation was 3.74, or 0.40 above normal; the greatest monthly amount, 4.94, occurred at Rivervale, and the least, 2.17, at Franklin Furnace.—*E. W. McGann.*

New Mexico.—The mean temperature was 54.9°, or about 1.0° above normal; the highest was 98°, at San Marcial on the 26th, and the lowest, 10°, at Fort Union on the 5th. The average precipitation was 0.99, or about 0.50 above normal; the greatest monthly amount, 2.17, occurred at Fort Union, and the least, 0.16, at Lordsburg.—*R. M. Hardinge.*

New York.—The mean temperature was 42.8°, or 0.8° below normal; the highest was 82°, at Cedarhill on the 17th, and the lowest, 2° below zero, at Number Four on the 5th. The average precipitation was 2.67, or 0.15 above normal; the greatest monthly amount, 5.90, occurred at Brentwood, and the least, 0.33, at Ogdensburg.—*R. G. Allen.*

North Carolina.—The mean temperature was 54.1°, or about 4.0° below normal; the highest was 90°, at Newbern on the 19th, and the lowest, 15°, at Linnville on the 6th. The average precipitation was 3.70, or about normal; the greatest monthly amount, 6.60, occurred at Lumberton, and the least, 2.32, at Morganton.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 42.1°, or 0.7° above normal; the highest was 87°, at Minot on the 18th, and the lowest, 4° below zero, at Berthold Agency on the 1st. The average precipitation was 1.51, or 1.17 below normal; the greatest monthly amount, 4.16, occurred at University, and the least, 0.15, at Towner.—*B. H. Bronson.*

Ohio.—The mean temperature was 47.2°, or 3.0° below normal; the month was the coolest April in sixteen years; the highest was 87°, at Thurman on the 30th, and the lowest, 10°, at Medina on the 3d. The average precipitation was 2.38, or 0.60 below normal; the greatest monthly amount, 4.54, occurred at Lancaster, and the least, 0.85, at Jacksonboro.—*H. W. Richardson.*

Oklahoma.—The mean temperature was 58.2°; the highest was 96°, at Arapaho on the 27th, and the lowest, 18°, at Putnam on the 4th. The average precipitation was 1.52; the greatest monthly amount, 5.86, occurred at Fort Sill, and the least, 0.44, at Kingfisher.—*J. I. Widmeyer.*

Oregon.—The mean temperature was 50.1°, or 2.4° above normal; the highest was 92°, at Prineville on the 28th, and the lowest, 8°, at Silverlake on the 3d. The average precipitation was 1.78, or 1.38 below normal; the deficiency was general over the entire State; the greatest monthly amount, 8.85, occurred at Bay City, and the least, trace, at Burns.—*B. S. Pague.*

Pennsylvania.—The mean temperature was 45.6°, or 2.2° below normal; the highest was 84°, at Greensboro on the 24th, and the lowest, 4°, at Dushore on the 3d. The average precipitation was 2.93, or 0.37 below normal; the greatest monthly amount, 5.34, occurred at Swiftwater, and the least, 1.36, at Chambersburg.—*T. F. Townsend.*

South Carolina.—The mean temperature was 58.0°, or 4.8° below normal; the highest was 92°, at Shaws Fork on the 30th, and the lowest, 25°, at Central on the 7th. The average precipitation was 5.05, or 1.91 above normal; the greatest monthly amount, 7.61, occurred at Edisto, and the least, 2.48, at Charleston.—*J. W. Bauer.*

South Dakota.—The mean temperature was 45.7°, or about normal; the highest was 92°, at Cherry Creek on the 15th and 26th, and at Pierre on the 15th, and the lowest, 3° below zero, at Rockford on the 1st. The average precipitation was 1.44, or 0.97 below normal; the greatest monthly amount, 3.35, occurred at Montrose, and the least, 0.10, at Forest City.—*S. W. Glenn.*

Tennessee.—The mean temperature was 53.4°, or about 6.0 below normal; the highest was 88°, at Brownsville on the 30th, and the lowest, 15°, at Silverlake on the 6th. The average precipitation was 4.19, or slightly below normal; the greatest monthly amount, 7.22, occurred at Tracy City, and the least, 2.54, at Springdale.—*H. C. Bate.*

Texas.—The mean temperature for the State, determined by comparison of 38 stations distributed throughout the State, was 3.0° below the normal. There was a slight excess over west Texas and in the vicinity of Camp Eagle Pass, while there was a general deficiency over the other portions of the State. The highest was 101°, at Fort Ringgold on the 23d and 24th, and the lowest, 20°, at Valentine on the 5th. The precipitation on an average for the State during the month, determined by comparison of 39 stations distributed throughout the State, was 0.40 below the normal. Nearly normal conditions prevailed over west Texas, the panhandle, and the western portion of the coast district. There was a general deficiency ranging from about 1.00 to 3.31 over east, southwest, and north Texas, and the northern portion of central Texas, with the greatest deficiency in the vicinity of Tyler, while over the central and east portions of the coast district and the southern portion of central Texas there was a general excess, with the greatest, 3.55, in the vicinity of Burnet. The greatest monthly amount, 6.83, occurred at Burnet, and the least, 0.09, at Mount Blanco.—*I. M. Cline.*

Utah.—The mean temperature was 51.5°; the highest was 98°, at St. George on the 26th, and the lowest, 8°, at Loa on the 4th. The average precipitation was 0.72, or below normal; the greatest monthly amount, 1.58, occurred at Logan, and the least, 0.15, at Richfield.—*J. H. Smith.*

Virginia.—The mean temperature was 51.4°, or several degrees below

normal; the highest was 97°, at Leesburg on the 19th, and the lowest, 12°, at Dale Enterprise on the 6th. The average precipitation was 3.66, or 0.63 above normal; the greatest monthly amount, 8.15, occurred at Hampton, and the least, 1.56, at Manassas.—*E. A. Evans.*

Washington.—The mean temperature was 49.3°, or about 1.5° above normal; the highest was 85°, at Lind on the 25th, and the lowest, 19°, at Ellensburg on the 7th. The average precipitation was 1.88, or over 1.50 below normal; the greatest monthly amount, 8.44, occurred at Clearwater, and the least, trace, at Bridgeport and Lakeside.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 48.0°, or about 4.0° below normal; the highest was 86°, at Eastbank on the 17th, and the lowest, 2°, at Dayton on the 6th. The average precipitation was 3.14, or about

0.25 below normal; the greatest monthly amount, 4.86, occurred at Morgantown, and the least, 1.40, at Huntington.—*C. M. Strong.*

Wisconsin.—The mean temperature was 43.5°, or 1.3° below normal; the highest was 84°, at Brodhead on the 16th, and the lowest, 4°, at Florence on the 5th and at Ocoola on the 2d. The average precipitation was 2.42, or 0.59 below normal; the greatest monthly amount, 4.51, occurred at Neillsville, and the least, 0.40, at Bayfield.—*W. M. Wilson.*

Wyoming.—The mean temperature was 44.3°, or 3.5° above normal; the highest was 90°, at Ft. Laramie on the 27th, and the lowest, zero, at Four Bear on the 1st. The average precipitation was 0.93, or 0.60 below normal; the greatest monthly amount, 2.03, occurred at Carbon, and the least, 0.15, at Lowell.—*W. S. Palmer.*

RIVER AND FLOOD SERVICE.

By PARK MORRILL, Forecast Official, in charge of River and Flood Service.

The flood in the lower Mississippi culminated at Cairo on the 6th at a stage of 49.8 feet; during the rest of the month the river fell steadily at this point, except for a slight rise in the last two days. At Memphis the highest water of record, 37.3 feet, was reached on the 11th and 12th. The great height of water at this point, notwithstanding the fact that the flood was not very destructive, is to be explained by the fact that the levees in front of the St. Francis bottom remained nearly intact, and thus forced a large volume of water to descend the channel which, in the past, has passed through the St. Francis swamps. That the volume of flood water was not exceptionally large is shown by the comparatively moderate stage reached at Vicksburg, where the crest was attained on the 24th and 25th at a stage of 49.4 feet.

The great flood wave in the Ohio rapidly subsided during the first ten days of the month. The high water in the Missouri and Arkansas, at the beginning of the month, also soon decreased to the usual low stages. During the latter half of the month all the great tributaries of the Mississippi were at their normal heights, and the danger of flood may now be regarded as past.

The highest and lowest water, mean stage, and monthly range at 117 river stations are given in the accompanying table. Hydrographs for typical points on seven principal rivers are shown on the chart. The stations selected for charting are: Keokuk, St. Louis, Cairo, Memphis, and Vicksburg, on the Mississippi; Cincinnati, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

For fuller details see Monthly Bulletin of the River and Flood Service for April, 1898.

Heights of rivers above zeros of gauges, April, 1898.

Stations.	Distance to mouth of river.	Danger line on gauge.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
<i>Mississippi River.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
St. Paul, Minn.....	1,957	14	4.1	15, 16	3.0	27-30	3.7	1.1
Reeds Landing, Minn.....	1,887	12	3.4	2	2.7	12, 13	3.1	0.7
La Crosse, Wis.....	1,822	10	5.1	2, 3, 27, 28	4.2	13, 16	4.7	0.9
North McGregor, Iowa.....	1,762	18	6.0	30	4.4	15-18	5.2	1.6
Dubuque, Iowa.....	1,702	15	5.7	6, 7, 30	4.4	16-18	5.1	1.3
LeClaire, Iowa.....	1,612	10	3.9	8, 9	3.1	18, 19	3.5	0.8
Davenport, Iowa.....	1,506	15	5.0	8, 9	4.1	18, 19	4.6	0.9
Galland, Iowa.....	1,475	8	3.0	1	2.4	22	2.7	0.6
Keokuk, Iowa.....	1,466	14	5.1	14	3.8	22	4.5	1.3
Hannibal, Mo.....	1,405	17	7.6	15	5.2	22	6.0	2.4
Grafton, Ill.....	1,307	23	15.5	1	10.0	30	12.5	5.5
St. Louis, Mo.....	1,264	30	22.8	1	13.5	24	17.1	9.3
Chester, Ill.....	1,189	30	20.4	1	10.2	25	13.8	10.2
Cairo, Ill.....	1,073	40	49.8	6	27.0	27	39.8	22.8
Memphis, Tenn.....	843	33	37.3	11, 12	20.7	29	32.3	16.6
Helena, Ark.....	767	44	49.1	17	35.0	30	44.7	14.1
Arkansas City, Ark.....	635	42	51.2	19-21	43.0	1	48.8	8.2
Greenville, Miss.....	595	40	46.2	21	36.5	1	43.2	9.7
Vicksburg, Miss.....	474	41	49.4	24, 25	39.4	1	46.4	10.0
New Orleans, La.....	108	16	16.9	27, 28	13.4	1	15.6	3.5
<i>Arkansas River.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
Wichita, Kans.....	720	10	2.7	30	1.2			
Fort Smith, Ark.....	345	22	14.3	1	4.6			
Dardanelle, Ark.....	350	21	16.7	1	5.0			
Little Rock, Ark.....	170	23	21.0	1	7.0			
<i>White River.</i>								
Newport, Ark.....	150	26	30.7	1	13.1	23, 30	20.6	17.6
<i>Des Moines River.</i>								
Des Moines, Iowa.....	150	19	4.4	19-23	4.1	1, 10, 14-17	4.2	0.3
<i>Illinois River.</i>								
Peoria, Ill.....	135	14	19.2	1	10.9	30	14.4	8.3
<i>Missouri River.</i>								
Bismarck, N. Dak.....	1,201	14	10.7	15	3.5	11	5.7	7.2
Pierre, S. Dak.....	1,006	14	8.7	17	1.8	14	4.3	6.9
Sioux City, Iowa.....	676	19	12.7	20	5.9	16	7.7	6.8
Omaha, Nebr.....	561	18	12.3	21	6.4	5-7, 12, 17-19	7.8	5.9
St. Joseph, Mo.....	373	10	7.6	23	1.3	1, 2	3.3	6.3
Kansas City, Mo.....	290	21	14.2	24	6.4	2	8.7	7.8
Boonville, Mo.....	191	20	12.6	25	6.6	5, 20-23	8.2	6.0
Hermann, Mo.....	95	24	13.1	1	6.8	22	9.2	6.3
<i>Ohio River.</i>								
Pittsburg, Pa.....	966	22	13.5	26	3.9	23	6.9	9.6
Davis Island Dam, Pa.....	960	25	13.2	27	5.9	23	8.4	7.3
Wheeling, W. Va.....	875	36	23.0	1	7.0	23	10.7	16.0
Parkersburg, W. Va.....	785	35	26.2	1	8.5	24	12.9	17.7
Point Pleasant, W. Va.....	703	36	39.0	1	9.0	25	16.9	30.0
Catlettsburg, Ky.....	651	50	47.5	1	12.3	25	21.8	35.2
Portsmouth, Ohio.....	612	50	50.5	1	13.8	25	23.3	36.7
Cincinnati, Ohio.....	499	45	56.5	1	16.5	27	27.1	40.0
Louisville, Ky.....	367	24	35.0	1	7.8	28	13.3	27.2
Evansville, Ind.....	184	30	44.8	2, 3	16.1	30	28.0	28.7
Paducah, Ky.....	47	40	47.3	6	19.6	27	33.7	27.7
<i>Alleghany River.</i>								
Warren, Pa.....	177	7	6.8	25	1.4	19-21	2.8	5.4
Oil City, Pa.....	123	13	6.8	25	1.8	20	3.4	5.0
Parkers Landing, Pa.....	73	20	7.7	25	1.5	18-20	3.2	6.2
Freeport, Pa.....	26	20	11.1	1, 26	3.5	30-22	5.8	7.6
<i>Conemaugh River.</i>								
Johnstown, Pa.....	64	7	4.1	1	2.0	14, 19, 22, 23	2.5	2.1
<i>Red Bank Creek.</i>								
Brookville, Pa.....	35	8	1.6	1	0.4	12-23	0.8	1.2
<i>Beaver River.</i>								
Ellwood Junction, Pa.....	10	14	3.0	25	1.2	19	1.7	1.8
<i>Cumberland River.</i>								
Burnside, Ky.....	434	50	14.8	15	5.6	24	8.9	9.2
Carthage, Tenn.....	257	30	17.1	17	8.9	27	12.6	8.2
Nashville, Tenn.....	175	40	23.3	1	12.9	28	17.8	10.4
<i>Great Kanawha River.</i>								
Charleston, W. Va.....	61	30	17.0	1	5.3	24	7.7	11.7
<i>New River.</i>								
Hinton, W. Va.....	95	14	6.0	1	2.2	24	3.4	3.8
<i>Licking River.</i>								
Falmouth, Ky.....	30	25	6.8	1	2.6	12, 13	3.6	4.2
<i>Miami River.</i>								
Dayton, Ohio.....	69	18	4.7	1	2.3	23	2.9	2.4
<i>Monongahela River.</i>								
Weston, W. Va.....	161	18	6.0	26	-0.9	12	0.7	6.9
Fairmont, W. Va.....	119	25	12.6	26	1.7	23	4.2	10.9
Greensboro, Pa.....	81	18	15.5	26	8.1	9, 10, 23, 24	9.8	7.4
Lock No. 4, Pa.....	40	28	20.0	26	8.3	24	11.1	11.7
<i>Cheat River.</i>								
Rowlesburg, W. Va.....	36	14	5.0	1, 2	3.0	10, 11, 30	4.1	2.0
<i>Toughiogheny River.</i>								
Confluence, Pa.....	59	10	4.8	16	1.8	29, 30	2.8	3.0
West Newton, Pa.....	15	23	5.9	16	1.7	12, 14, 24	2.8	4.2
<i>Muskingum River.</i>								
Zanesville, Ohio.....	70	20	19.5	26	8.4	14, 19, 30	10.6	11.1
<i>Tennessee River.</i>								
Knoxville, Tenn.....	614	29						
Kingsport, Tenn.....	534	25	12.2	1	2.8	26	5.0	9.4
Chattanooga, Tenn.....	430	33	18.0	2	6.5	26, 27	9.4	11.5
Bridgeport, Ala.....	390	24	13.7	2	5.0	23, 24, 27	7.6	8.7
Florence, Ala.....	220	16	11.5	4	5.9	29, 30	8.3	5.6
Johnsonville, Tenn.....	94	21	21.7	7	9.4	30	15.3	12.3